



Ground Crew Coordination

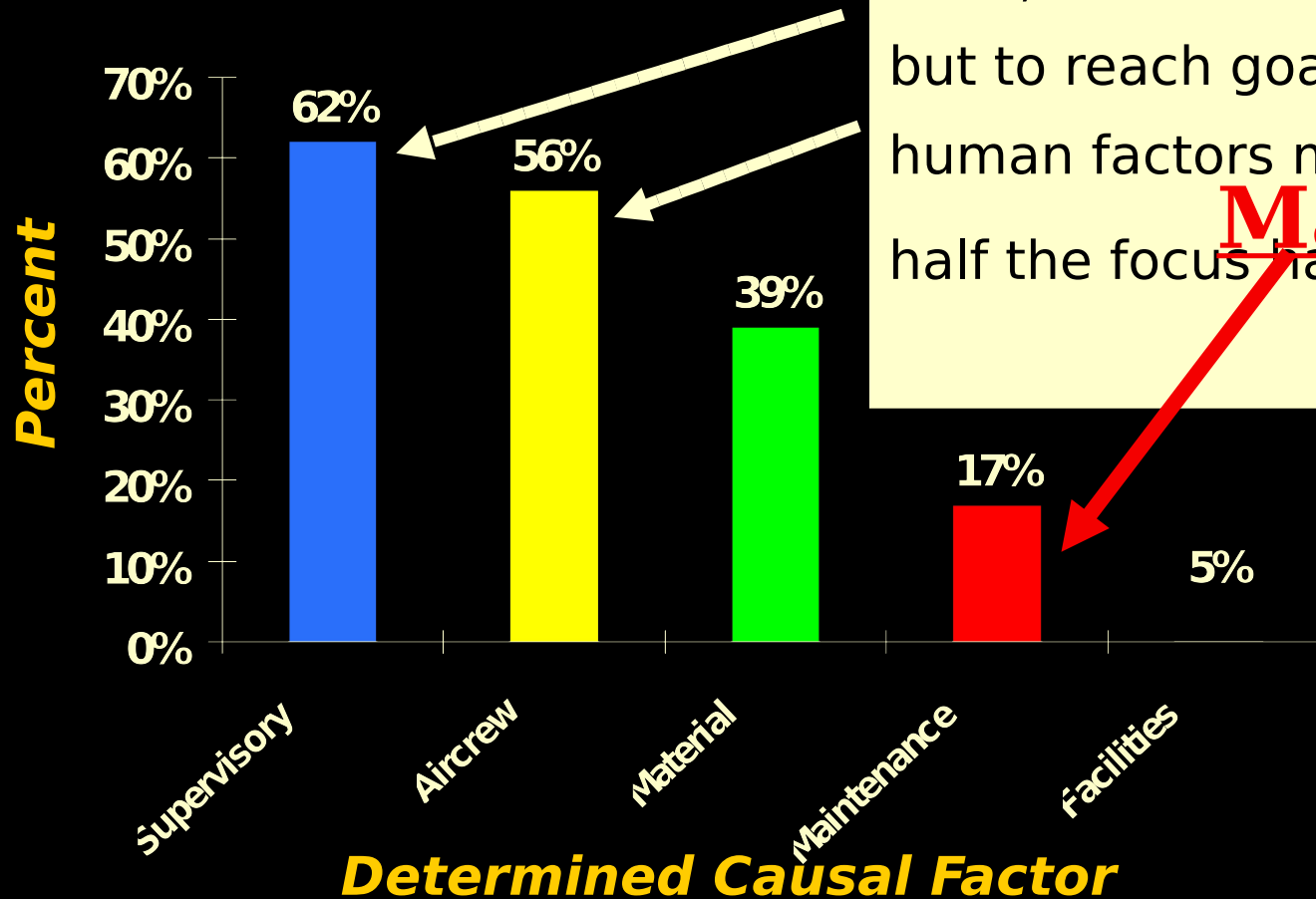


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Human Factor Analyst
Naval Safety Center

Mishap Data Analysis

Focus:

Naval Aviation Class A EM Causal Factors



Initial emphasis on "Pilot Error,"

but to reach goal of cutting human factors mishaps in half the focus has turned to:

Maintenance

DEFENCES

BREACHES

Serviceable AME

Incorrect screw fitted causing restriction

Safety Indicator

**False lock indication -
Actuator out of adjustment**

Redesigned bellcrank

Bellcrank not procured by RAAF

Accurate Procedures

**Procedures deficient
or ambiguous**

Training

**Deficient training/
inadequate OJE**

Authorisation

**Tradesman not authorised
to complete task**

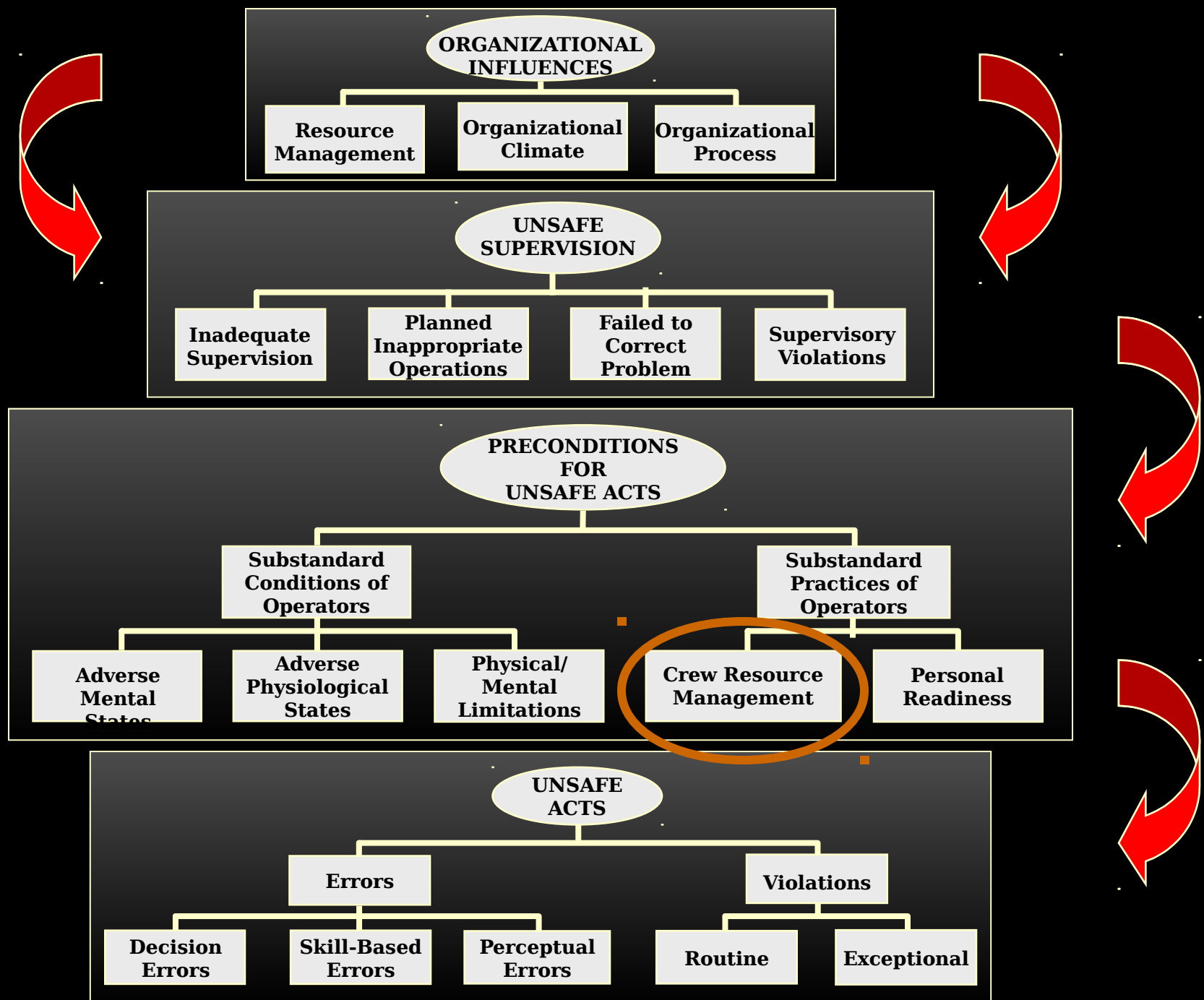
**Culture - Adherence to policy/
procedure**

**Violation of policy
and procedure**

Supervision & Inspection

**Inadequate
supervision and
inspection provided**

INCIDENT



Groundcrew Coordination (GCC)



**“Managing Risk and
Maximizing Effectiveness”**

Enabling Objectives

- **Gain an understanding of what GCC is and why it is important.**
- **Discuss the seven behavioral skills associated with GCC and define them accurately.**
- **Given an aircraft ground mishap, be able to evaluate its causes, and determine how GCC could be used to avoid them in the future.**

We are not alone!

Airlines Worldwide:

Maintenance problems are the second greatest contributor to onboard fatalities, following controlled flight into terrain (CFIT).

History of GCC

Continental Airlines initiated a Crew Coordination Concepts (CCC) program *“to equip all maintenance personnel with the skill to use all resources to improve safety and efficiency.”* The training covers organizational routines, assertive behavior, leadership styles, stress management, decision-making, and interpersonal skills. The results after the first three years of CCC were remarkable.

- 1200 employees received training (2/3 workforce)

- Maintenance ground damage costs cut by 66%
- Dramatically reduced upward trend in injuries

GCC Definition

What is Groundcrew Coordination?

A process of coordinated action among groundcrew personnel which enable them to interact effectively while performing mission tasks and handling emergencies.

LEARNING TO ACT AS A

GCC Importance

Why is GCC Training important?

Good groundcrew coordination can increase mission effectiveness by minimizing crew-preventable errors, maximizing crew resources, and optimizing risk management.

GCC Naval Aviation Importance

Failure to coordinate was found in:

- **Almost 70% of All Aircraft Ground Mishaps!**
- **Over 50% of Personal Injury Maintenance Mishaps!**
- **Almost 50% of All Class A /B Mishaps!**

Causes of Human Factor Error

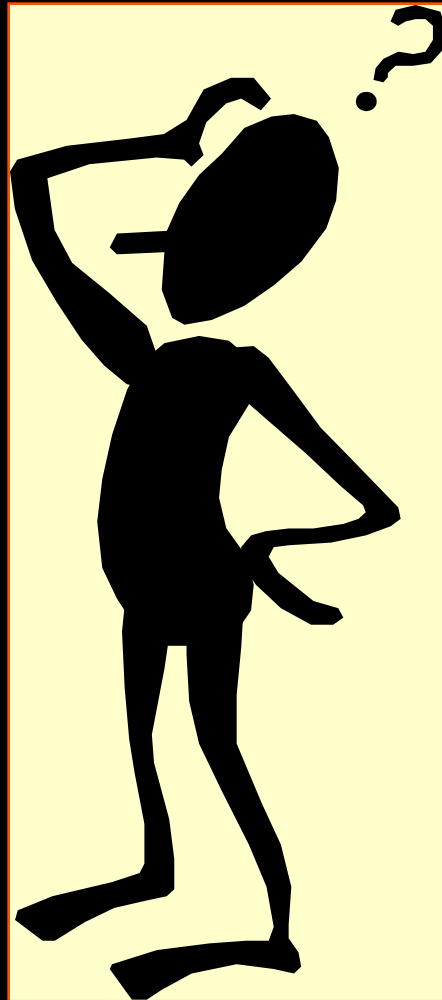
“Dupont’s Dirty Dozen”

- | | |
|------------------------------------|----------------------|
| 1) Lack of Communication Resources | 7) Lack of Resources |
| 2) Complacency | 8) Pressure |
| 3) Lack of Knowledge Assertiveness | 9) Lack of |
| 4) Distraction | 10) Stress |
| 5) Lack of Teamwork Awareness | 11) Lack of |

GCC Seven Behavioral Skills

- ✓ **Decision Making**
- ✓ **Assertiveness**
- ✓ **Mission Analysis**
- ✓ **Communication**
- ✓ **Leadership**
- ✓ **Adaptability/Flexibility**
- ✓ **Situational Awareness**

Decision Making



GROUNDCREW HUMAN FACTORS
KNOWLEDGE
ARE YOUR APs
UP TO DATE?



BEHAVIORAL SKILL:

Decision Making

Importance

Decision Making failures occur in:

- **11 % of Aircraft Ground Mishaps!**
- **7 % of Personal Injury Mishaps!**

“No...I won’t need goggles on this job.”



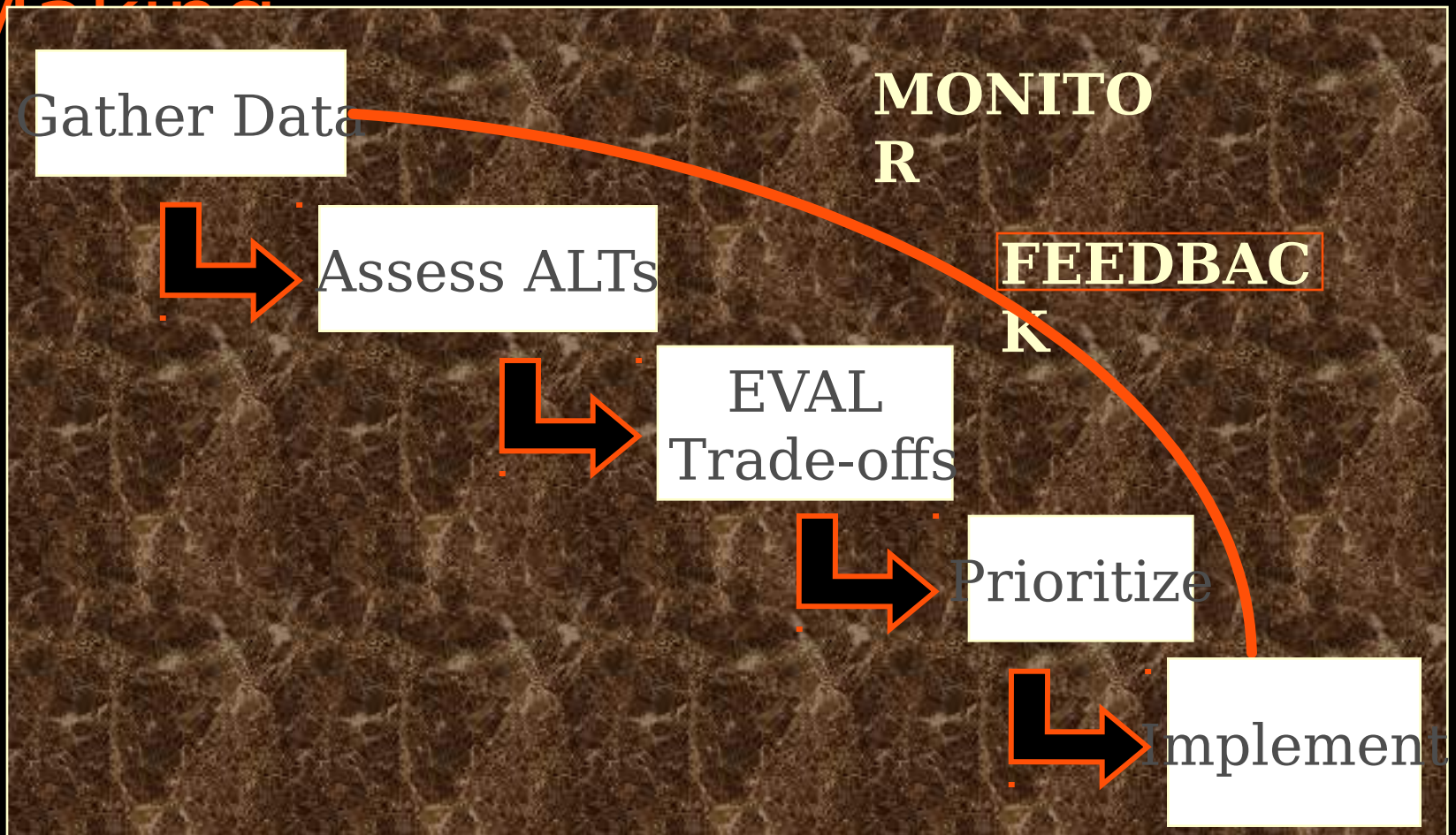
Decision Making- *the ability to use logical and sound judgment based on available information*

Barriers:

- Time demands/constraints
- Inaccurate/Vague Information
- Pressure to Perform
- Rank Differences/Gradient



BEHAVIORAL SKILL: Decision Making



BEHAVIORAL SKILL:

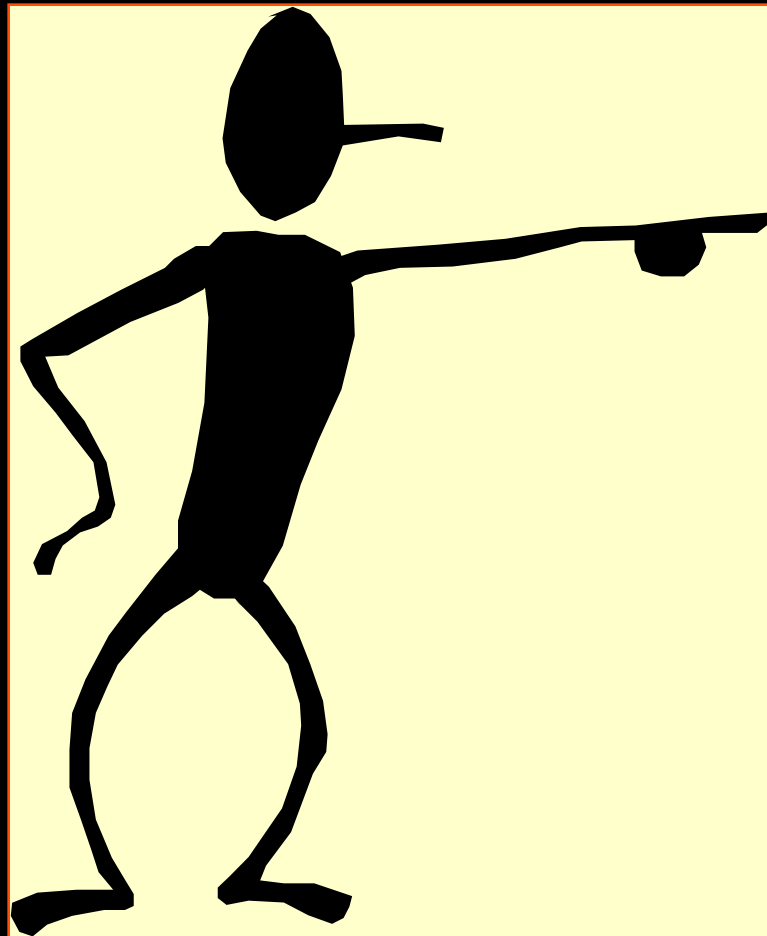
Decision Making

Factors Facilitating Decision Making

Employing Teamwork

- Allocating Ample Time
- Anticipating the Consequences
- Disseminating Decisions and Rationale
- Evaluating the Decision

Assertiveness



GROUNDCREW HUMAN FACTORS ASSERTIVENESS

IF YOU'VE
GOT A
PROBLEM...

I'd like to discuss
my little problem
with you sir....

ENGINEERING SCHEDULES 2001

COMMUNICATE IT!

BEHAVIORAL SKILL:

Assertiveness Importance

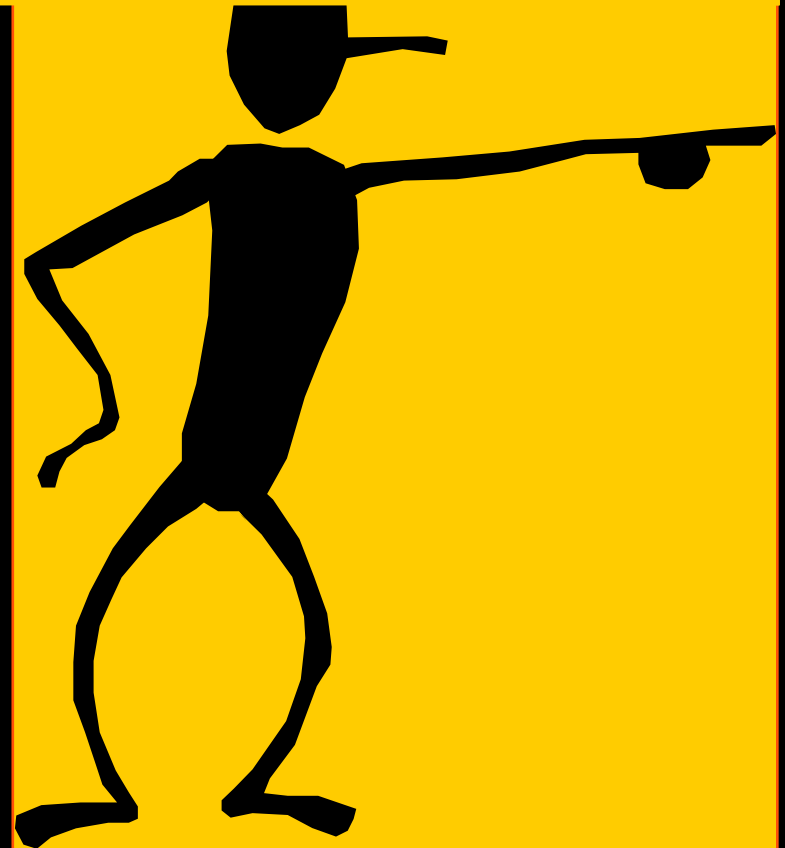
Assertiveness failures are found in almost

- **24% of Aviation Ground Mishaps**
- **10 % of Personal Injury Mishaps**

Assertiveness- *willingness to actively participate and ability to state and maintain individual position.*

Barriers:

- ❖ Rank differences
- ❖ Position Authority
- ❖ Inexperienced/New
- ❖ Coercion
- ❖ Lack of Confidence



BEHAVIORAL SKILL:

Assertiveness

“Rule of Thumb”

If a disagreement exists, take the most conservative action until more information is available.

BEHAVIORAL SKILL:

Assertiveness

Situations Requiring

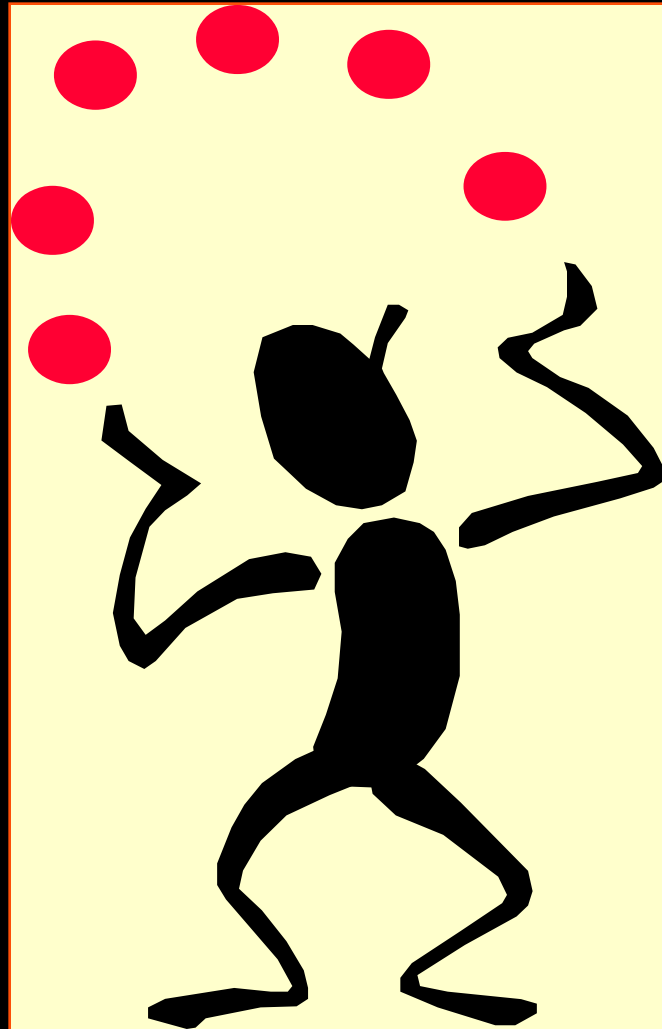
Assertiveness

- **Pre-Mission Brief**
- **Mission Execution**
- **Post-Mission Brief**

Assertive Tool Control?



Mission Analysis



GROUNDCREW HUMAN FACTORS

COMPLACENCY

CRUNCH

I'm sure
that wasn't there
when I came through
here a minute ago!

****?!****



BEHAVIORAL SKILL:

Mission Analysis

Importance

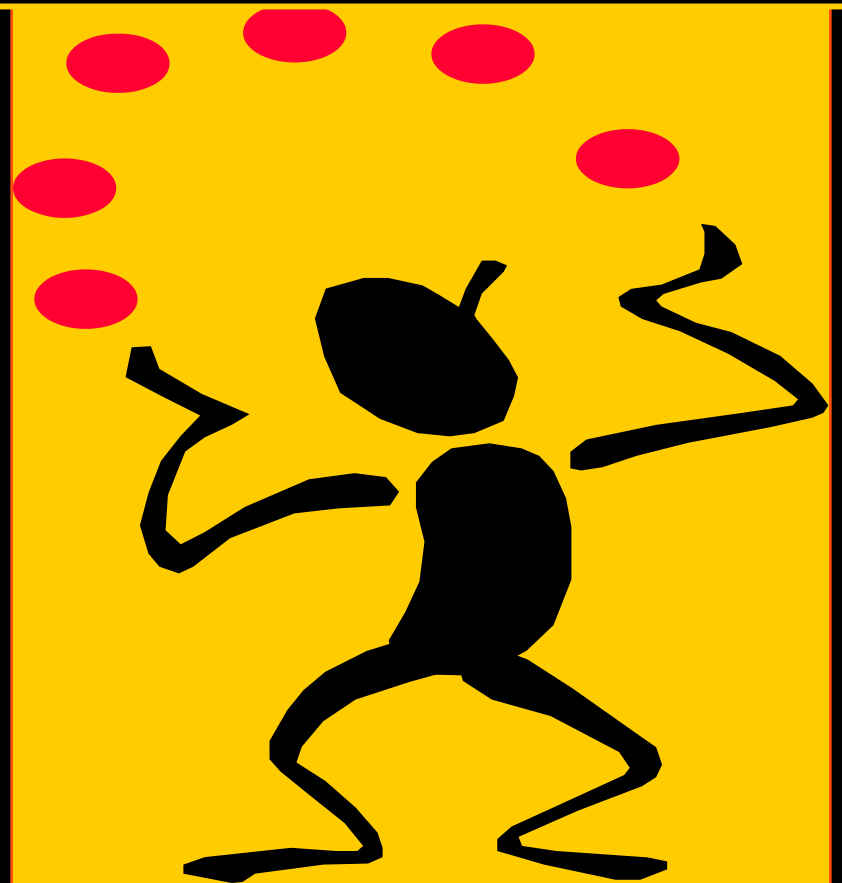
**Mission Analysis failures are
found in:**

- **52% of Aircraft Ground Mishaps!**
- **47% of Personal Injury Mishaps!**

Mission Analysis- *ability to allocate, coordinate, and monitor maintainer, equipment, & facility resources.*

Barriers:

- Time pressure
- OPs TEMPO
- Coercion



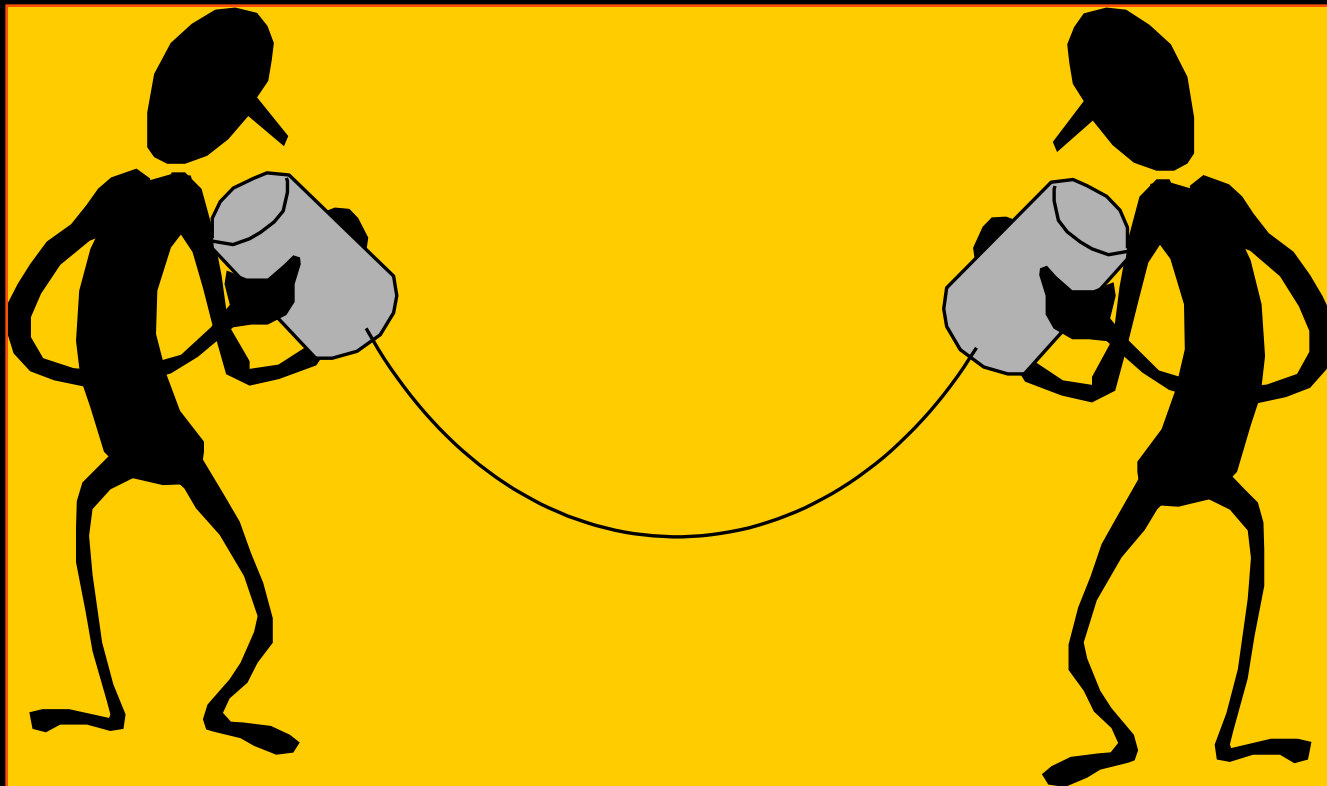
BEHAVIORAL SKILL:

Mission Analysis

Encompasses

- **Organization/Planning for What Will Occur During a Task**
- **Monitoring the Current Situation**
- **Reviewing and Providing Feedback on What has Occurred**

Communication



GROUNDCREW HUMAN FACTORS COMMUNICATION DON'T ASSUME,



CHECK FOR UNDERSTANDING

BEHAVIORAL SKILL:

Communication

Importance

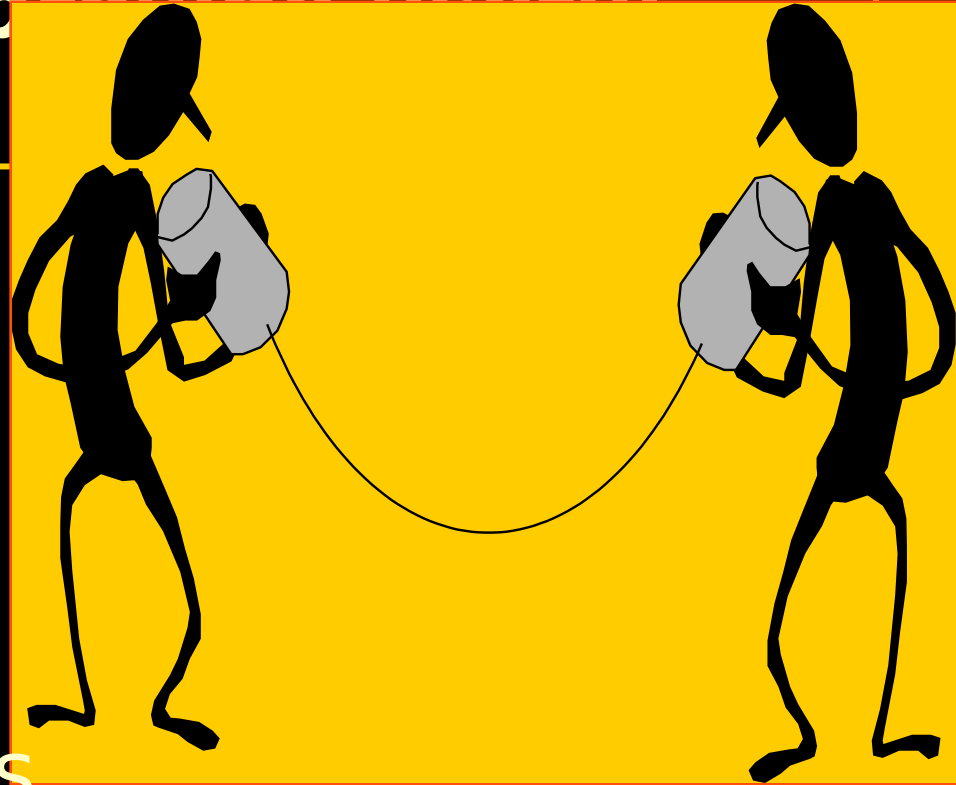
Communication failures occur in:

- **49% of Aircraft Ground Mishaps!**
- **33% of Personal Injury Mishaps!**

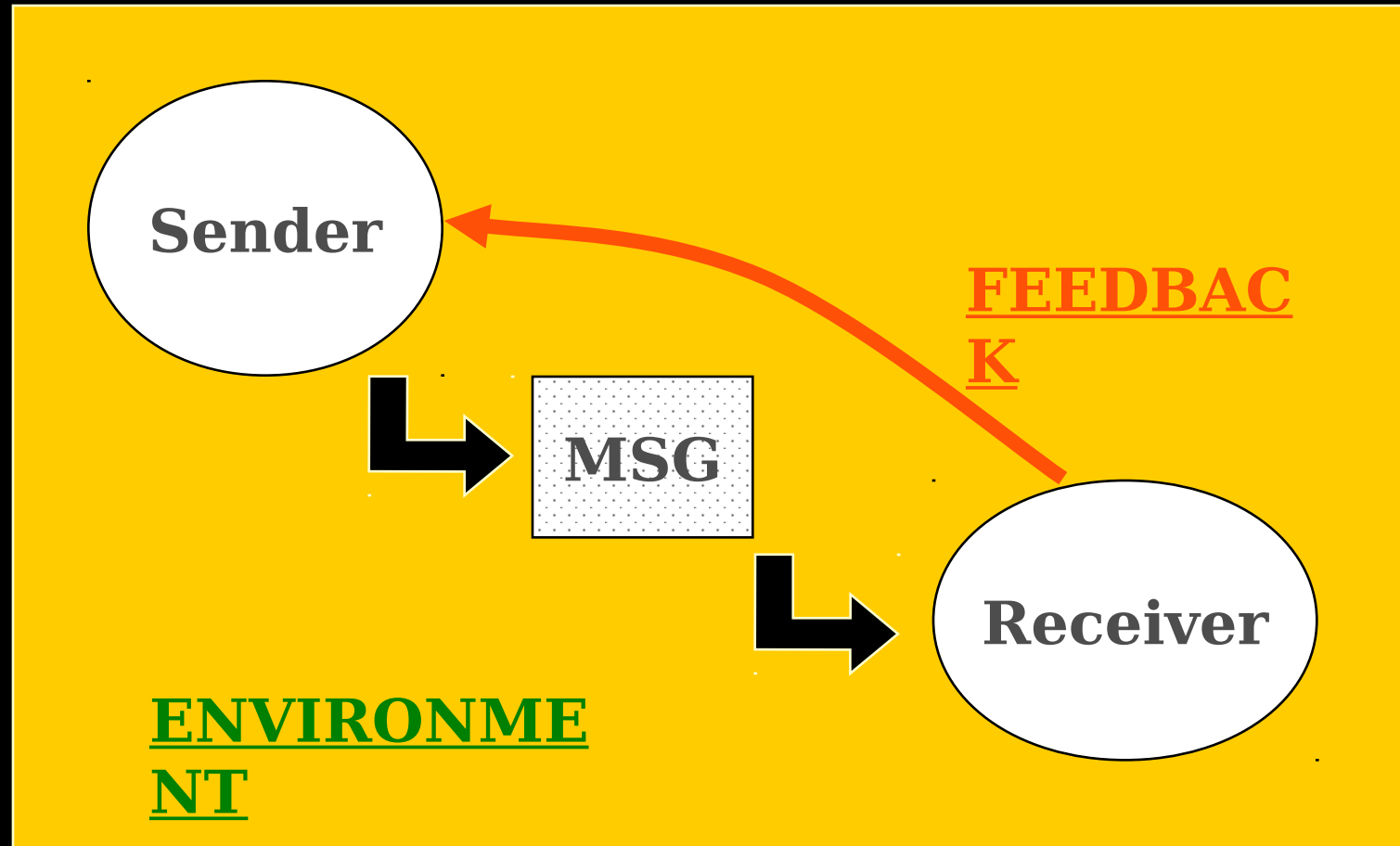
Communication- *ability to clearly/ accurately send information and provide useful feedback.*

Barriers:

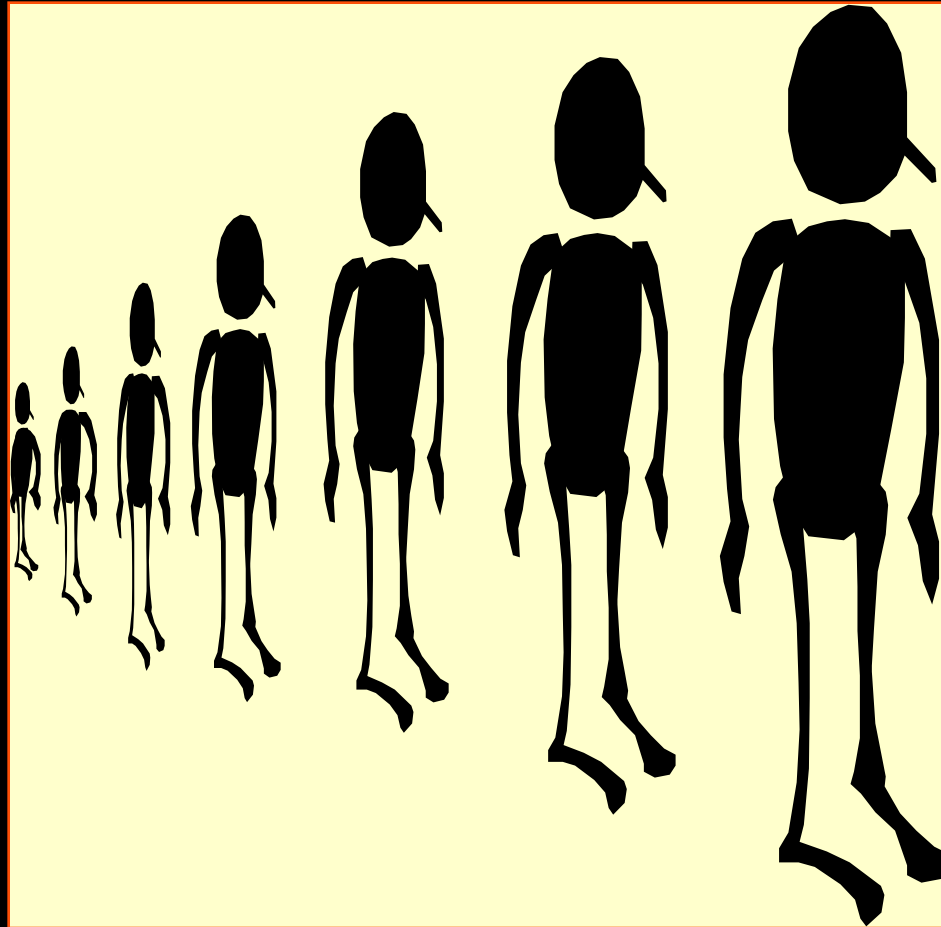
- Passive Listening
- No or Poor Feedback
- Non-Standard Terms
- Inappropriate Methods



BASIC COMMUNICATIONS MODEL



Leadership



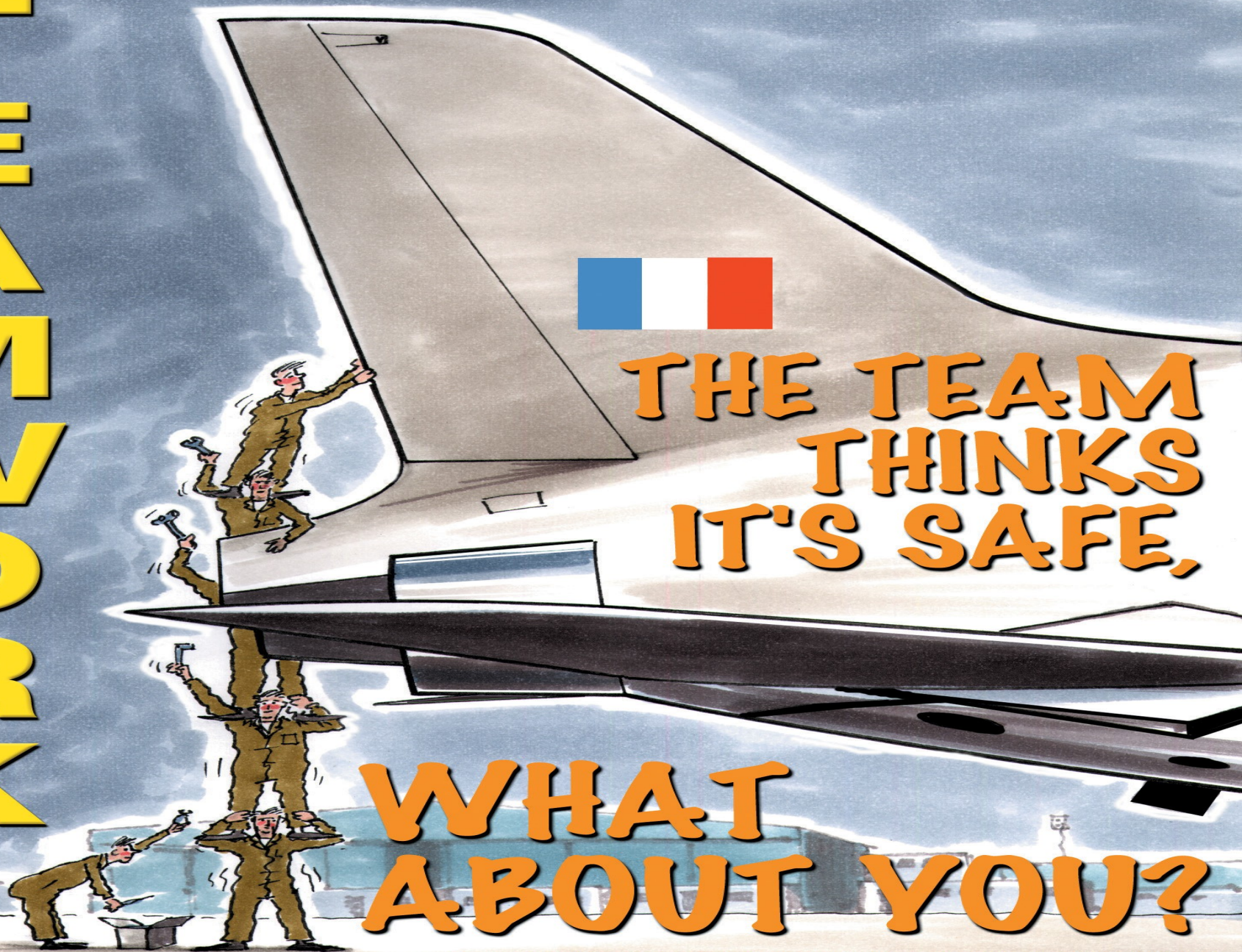
GROUNDCREW HUMAN FACTORS

TEAMWORK



THE TEAM
THINKS
IT'S SAFE,

WHAT
ABOUT YOU?



BEHAVIORAL SKILL:

Leadership Importance

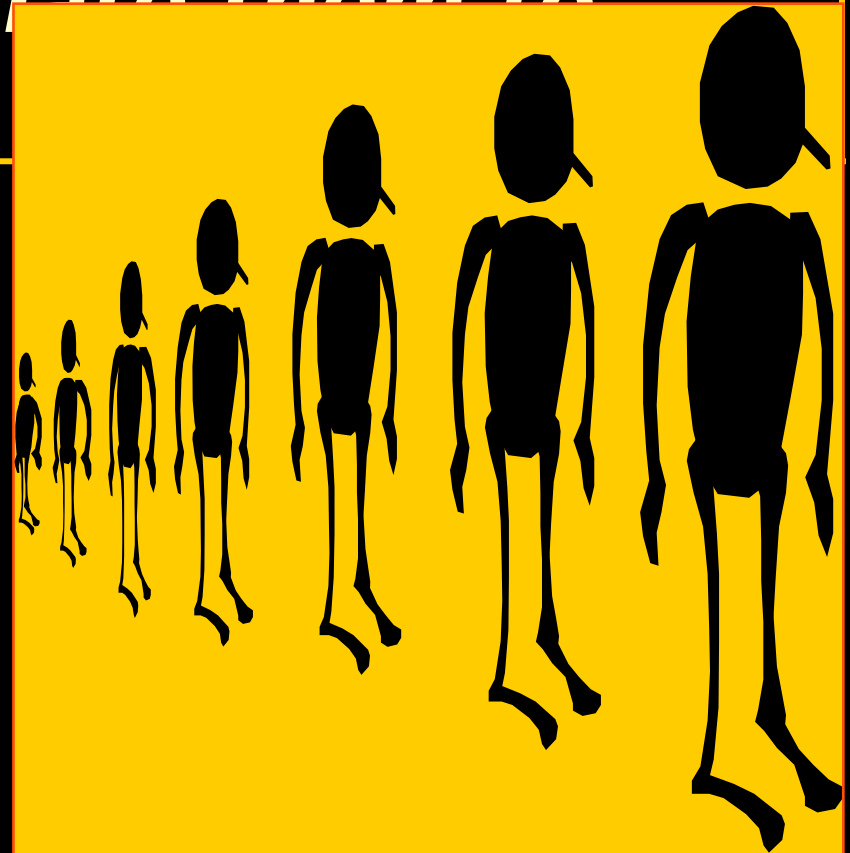
Poor Leadership was found in:

- **17% of Aircraft Ground Mishaps!**
- **31% of Personal Injury Mishaps!**

Leadership- *ability to direct/coordinate activities of others and to stimulate them to work as a team.*

Barriers:

- Rigidity
- Inexperience
- Pressure
- Micro-management
- Poor Interpersonal Skills
- New/Unusual Situations



BEHAVIORAL SKILL:

Leadership

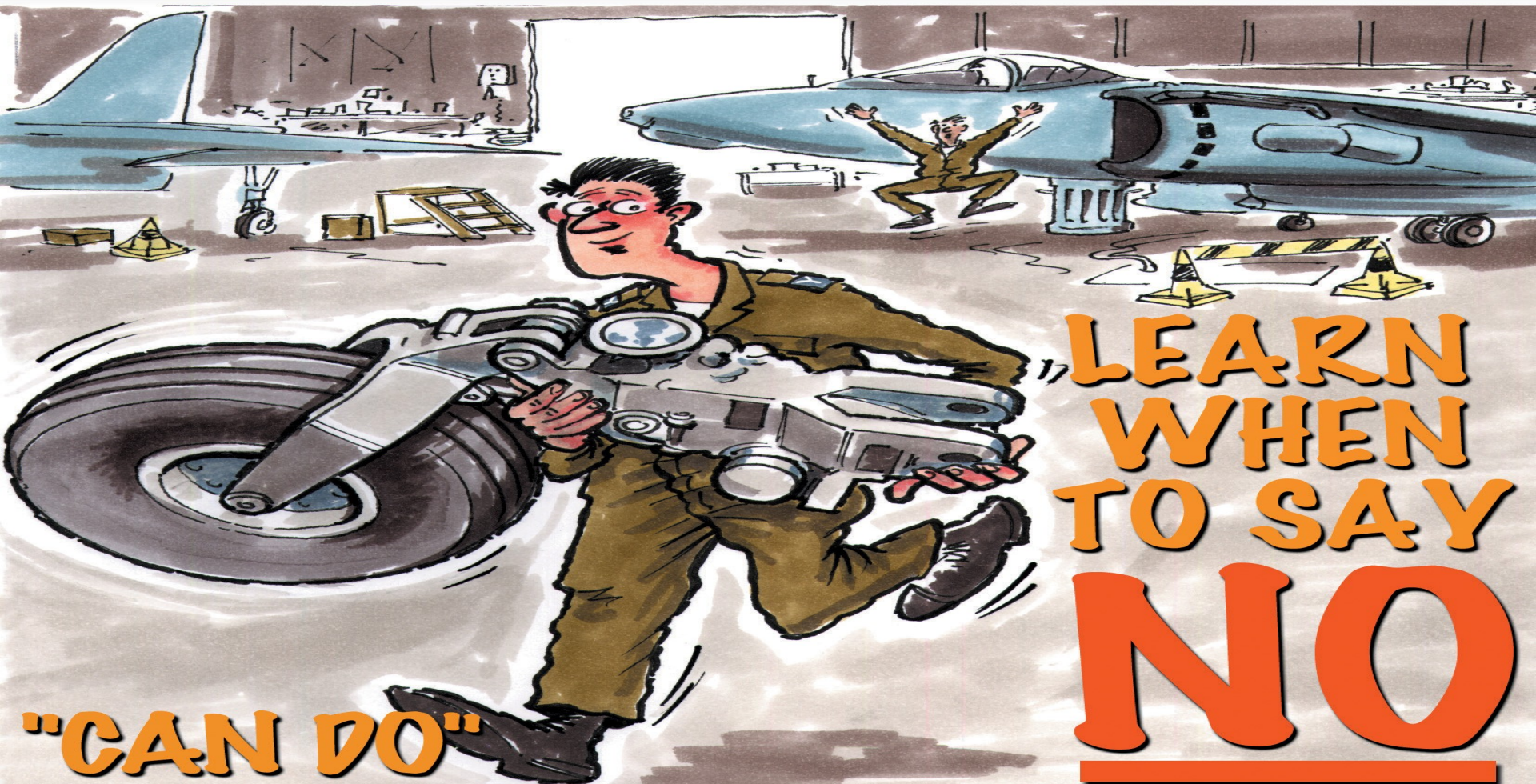
Types of Leadership

- **Designated - Leadership by authority, position, rank, or title**
 - formal/permanent
- **Functional - Leadership by knowledge or experience**
 - informal/temporary

Adaptability/Flexibility



GROUNDCREW HUMAN FACTORS
RESOURCES
NOT ENOUGH SPARES...



**LEARN
WHEN
TO SAY
NO**

**"CAN DO"
ONLY WORKS UP TO A POINT**

BEHAVIORAL SKILL:

Adaptability/Flexibility

Importance

Adaptability/Flexibility failures occur in

- **8 % of Aircraft Ground Mishaps!**
- **5 % of Personal Injury Mishaps!**

Adaptability/Flexibility- *ability to alter courses of action to meet situational demands.*

Barriers:

- Confusion/Stress
- Peer Pressure
- Groupthink Mindset
- Mission Schedule
- Personal Rigidity
- New/Unusual Situations



ell, at least they're flexib



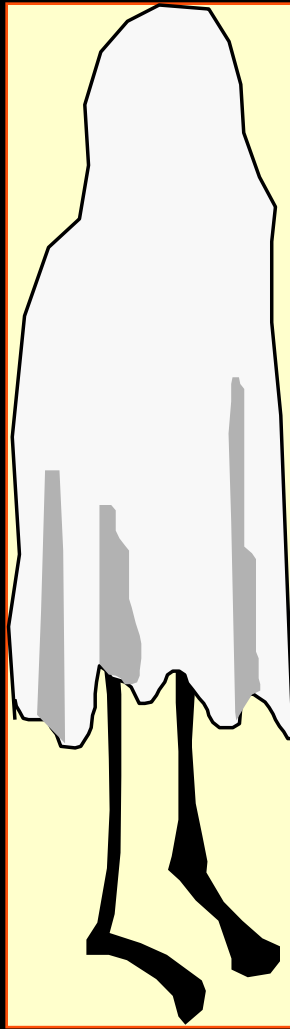
BEHAVIORAL SKILL:

Adaptability/Flexibility

Example Behaviors

- **Alter behavior to meet situational demands**
- **Be open and receptive to other ideas**
- **Help others when necessary**
- **Employ constructive behavior under pressure**
- **Adapt to internal/external environment changes**

Situational Awareness



GROUNDCREW HUMAN FACTORS
AWARENESS
CONCENTRATE....



..ON THE
BIG
PICTURE

!-DITTOUSZTC



BEHAVIORAL SKILL:

Situational Awareness Importance

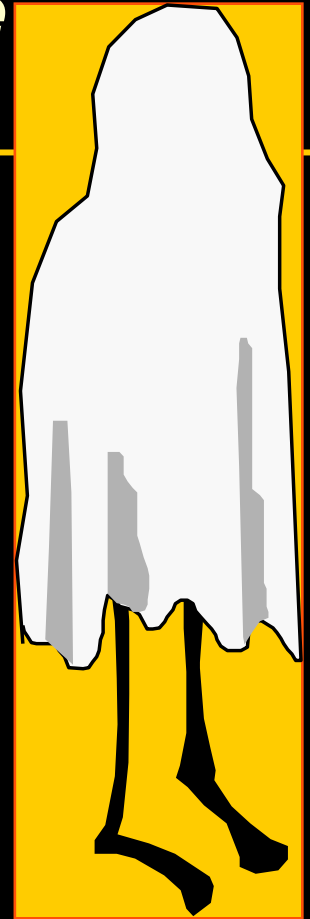
Situational Awareness failures were found in:

- **51% of Aviation Ground Mishaps!**
- **68% of Personal Injury Mishaps!**

Situational Awareness- *ability to maintain awareness of what is happening around as well as the primary task.*

Barriers:

- Lack of Communication
- Fatigue and/or Stress
- Task Over/Under-load
- “Groupthink” Mindset
- “Press-on” Mentality
- Degraded Conditions



BEHAVIORAL SKILL:

Situational Awareness

Encompasses the Ability to:

- **Identify sources of hazards/problems**
- **Extract/interpret essential information**
- **Maintain an accurate perception of your environment**
- **Detect situations requiring action**

BEHAVIORAL SKILL:

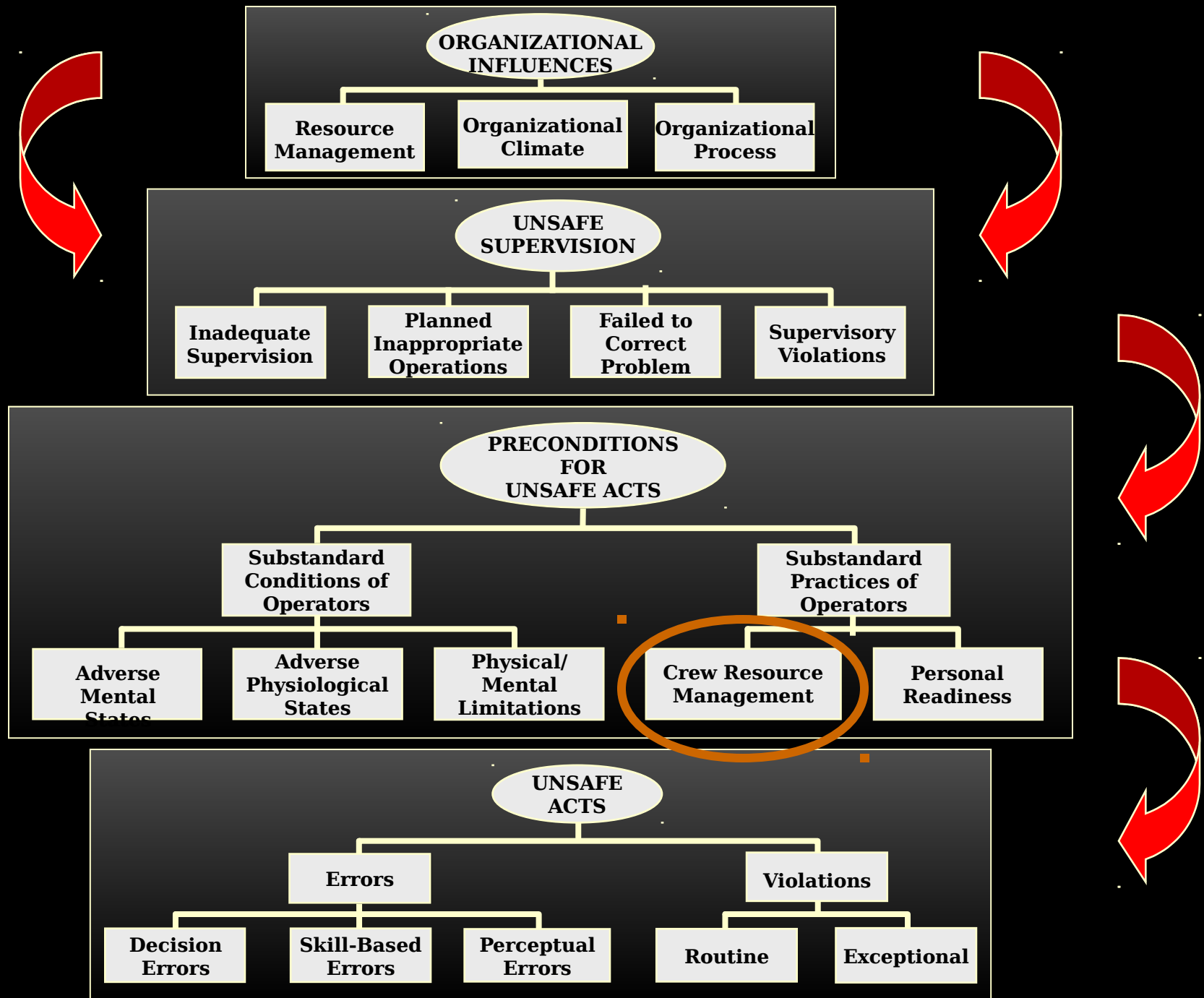
Situational Awareness Remedies

- **Actively question/evaluate**
- **Use assertive behavior when necessary**
- **Analyze/monitor situation continuously**
- **Update and revise mission profiles**

Case Scenario

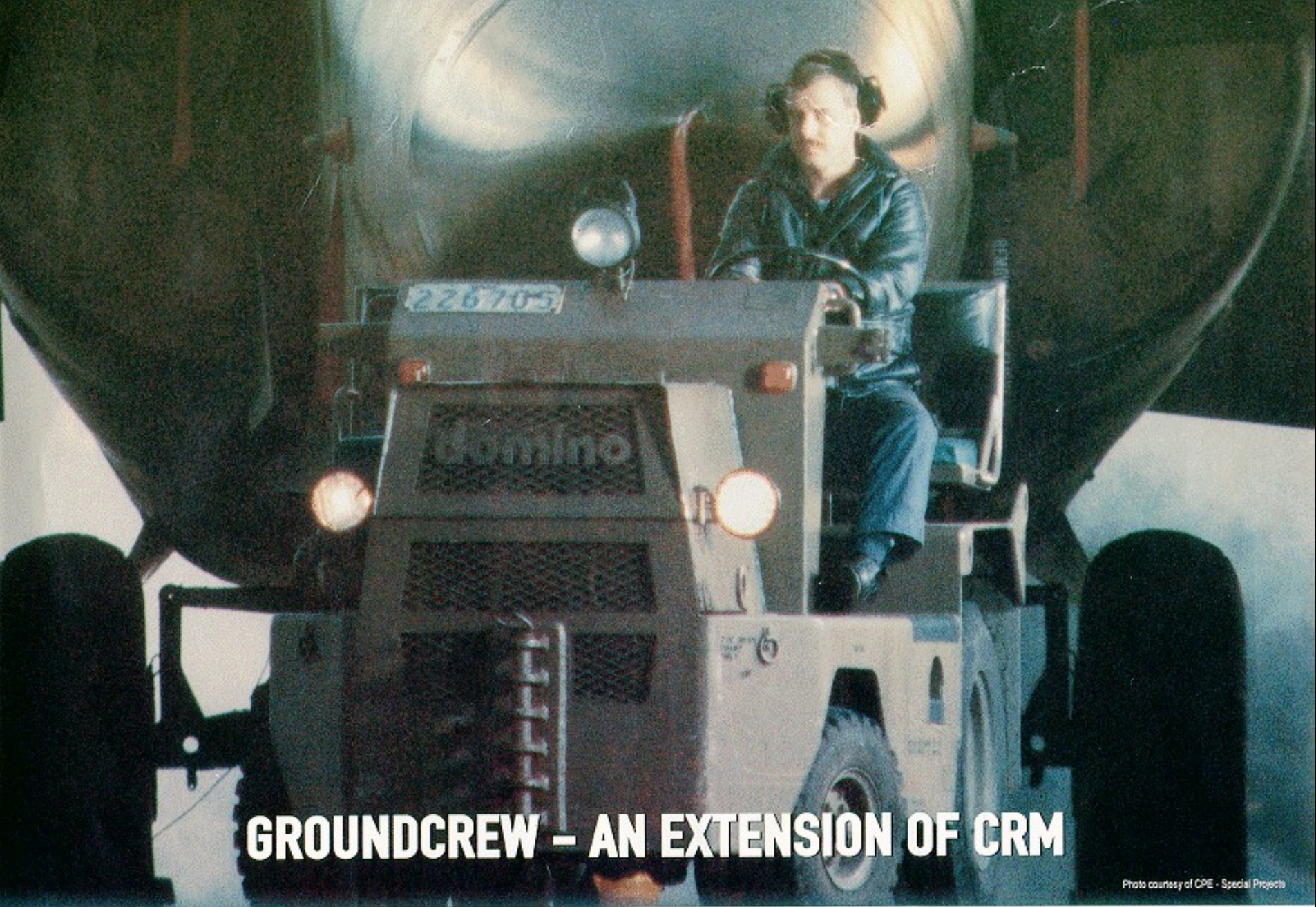
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ADCRITIC.COM



Summary

- ✓ Beware of the Dirty Dozen!
- ✓ Remember Perception = Reality!!
- ✓ Practice/Preach D-A-M-C-L-A-S!!!



GROUNDCREW – AN EXTENSION OF CRM

Photo courtesy of CPE - Special Projects

Joining together is a beginning; Keeping together is progress; Working together is success.

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Questions?